

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for recovering zinc from a zinc calcine and zinc sulphide concentrate in connection with an electrolytic precipitation of zinc, whereby a zinc sulphate solution obtained from a first leaching stage is directed via solution purification to zinc electrolysis and iron contained in raw materials is precipitated as jarosite, wherein the leaching of zinc calcine and zinc sulphide concentrate is performed in three stages in atmospheric conditions and at a temperature between 80 °C and the boiling point of the solution, whereby solids and solution move countercurrently in relation to each other and acid content of the leaching stages rises in the direction of the flow of the solids, the method comprising: wherein the concentrate leaching and iron precipitation take place in the second stage

a) feeding zinc calcine to a first neutral leaching stage, wherein the leaching in the first stage is carried out with a solution conducted from a second leaching stage, and wherein a zinc sulphate solution obtained from the first leaching stage is directed via solution purification to zinc electrolysis;

b) feeding both zinc concentrate and solids obtained from the first leaching stage to the second concentrate leaching and jarosite precipitation stage, wherein iron contained in raw materials is precipitated as jarosite, and the concentrate leaching is carried out with a solution conducted from a third leaching stage, and wherein the acid content in the second stage is kept at about 2-20 g/L H₂SO₄;

c) feeding solids obtained from the second stage to a third leaching stage, wherein the solids obtained from the second stage comprise undissolved ferrites, a portion of the concentrate, and the precipitated jarosite, wherein the ferrites and the portion of the concentrate from the second stage are leached with electrolysis return acid, wherein the acid content in the third stage is kept at about 25-70 g/L H₂SO₄, and wherein the undissolved precipitate comprises jarosite.

2. (currently amended) The method according to claim 1, wherein the zinc calcine is fed to the first leaching stage, neutral leaching, where leaching in the first stage is carried out in a pH range between 2 – 5.

3. (cancelled)

4. (currently amended) The method according to claim 1 [[3]], wherein the acid content in the second leaching stage is kept at about in the region of 5 – 15 g/L H₂SO₄ [[g/l]].

5. (cancelled)

6. (currently amended) The method according to claim 5, wherein the acid content in the third final leaching stage is kept at about in the region of 30 – 50 g/L H₂SO₄ [[g/l]].

7. (currently amended) The method according to claim 1, wherein the zinc calcine is leached in the neutral leaching in the first stage is carried out using both the solution conducted from the second leaching containing zinc-sulphates and iron-sulphates taken from the concentrate leaching and jarosite precipitation stage and return acid from electrolysis, wherein the solution conducted from the second leaching comprises zinc sulphates and iron sulphates.

8. (currently amended) The method according to claim 7, wherein the oxygen and/or air is fed into the neutral first leaching stage in order to oxidise the ferrous iron and precipitate it as hydroxide Fe(OH)₃, which co-precipitates the harmful minerals in the solution.

9. (previously presented) The method according to claim 8, wherein the harmful minerals are germanium and antimony.

10. (currently amended) The method according to claim 1, wherein the leaching in the ~~concentrate leaching and jarosite precipitation~~ second stage is performed ~~carried out using both~~ oxygen and/or air and ~~the solution conducted from the third leaching stage,~~ wherein the solution conducted from the third leaching stage comprises the acidic sulphate solution containing zinc and iron sulphates from the conversion stage.

11. (currently amended) The method according to claim 1, wherein the acid level in the ~~concentrate leaching and jarosite precipitation~~ content of the second stage is adjusted using electrolysis return acid.

12. (currently amended) The method according to claim 1, wherein alkali or ammonium ions are fed into the ~~concentrate leaching and jarosite precipitation~~ second stage in order to precipitate the jarosite as alkali or ammonium jarosite, and that wherein jarosite nuclei are recirculated within the stage.

13. (currently amended) The method according to claim 1, wherein ~~the ferrites and the portion of the concentrate from the second stage~~ the solids remaining from the concentrate-leaching and jarosite precipitation stage, which contain undissolved ferrites, part of the concentrate and the generated jarosite, are leached in the ~~conversion~~ third stage using ~~both~~ oxygen and ~~the~~ electrolysis return acid in order to leach the ferrites and end concentrate and to precipitate the dissolved iron as jarosite.

14. (currently amended) The method according to claim 1, wherein flotation is performed on the solids formed during the ~~concentrate conversion~~ third stage in order to form sulphur concentrate.